```
ISIS-II PL/M-86 V2.0 COMPILATION OF MODULE DECODE1
OBJECT MODULE PLACED IN DLINE.OBJ
COMPILER INVOKED BY:  :F0: DLINE.PLM DEBUG OPTIMIZE(2) DATE(FEBRUARY 2, 1982) XREF


            $title ('DECODE LINE MODULE')
  1         decode1:
            do;

            /*

              modified  3/26/81  R. Silberstein
              modified  3/30/81  R. Silberstein
              modified  4/9/81   R. Silberstein
              modified  4/10/81  R. Silberstein
              modified  7/24/81  R. Silberstein

            */

            /*

                  This is the module to decode each logical sourceline.
                  The module takes care of all symbol definitions, and
                  activates the PSEUDO-module and the INSTRUCTION-module
                  to perform the assembly of the current non-empty source-
                  line.
            */

            $include (:f1:macro.lit)
          = $nolist
            $include (:f1:struc.lit)
          = $nolist
            $include (:f1:equals.lit)
          = $nolist
            $include (:f1:ermod.lit)
          = $nolist
            $include (:f1:subr1.ext)
          = $nolist
            $include (:f1:subr2.ext)
          = $nolist
            $include (:f1:scan.ext)
          = $nolist
            $include (:f1:print.ext)
          = $nolist
            $include (:f1:instr.ext)
          = $nolist
            $include (:f1:pseud1.ext)
          = $nolist
            $include (:f1:pseud2.ext)
          = $nolist
            $include (:f1:ermod.ext)
          = $nolist
            $include (:f1:symb.ext)
          = $nolist
            $include (:f1:exglob.ext)
          = $nolist
```

CP/M-86 v.1.1 (Vol. IV)
COPYRIGHT © 1981, 1982
DIGITAL RESEARCH
P. O. BOX 579
PACIFIC GROVE, CA 93950
SER. # C81-162

```
          $include (:f1:dline.x86)
      =   $nolist
          $include (:f1:cm.ext)
      =   $nolist


193   1   saveaccum: proc;
194   2     acclensave=acclen;
195   2     call copy(acclen,.accum(0),.accumsave(0));
196   2   end saveaccum;


197   1   exchangeaccum: proc;
198   2     dcl lococclen byte,lococcum(80) byte;
199   2     lococclen=acclensave;
200   2     call copy(acclensave,.accumsave(0),.lococcum(0));
201   2     call saveaccum;
202   2     acclen=lococclen;
203   2     call copy(lococclen,.lococcum(0),.accum(0));
204   2   end exchangeaccum;

205   1   clearsymbol: proc;
206   2     CALL FILL (0, .CURRENTSYMBOL.BASEINDEX-.CURRENTSYMBOL+1, .CURRENTSYMBOL);
207   2   end clearsymbol;


208   1   pseudotype: proc(lg,ptr) byte;
209   2     dcl (lg,i,lvalue) byte,ptr address,pstable based ptr (1) byte;
210   2     if token.type <> pseudo then return lg+1;
212   2     i=0ffh;
213   2     do while (i:=i+1) < lg;
214   3       lvalue=token.value;
215   3       if lvalue=pstable(i) then$do
217   4         call scan;       /* skip found pseudo */
218   4         return i;
217   4       end$if;
        end$while;
221   2     return i;
222   2   end pseudotype;


        /* test if symbol if double defined or 'neglected' symbol */

223   1   not$doub$negl: proc(errno) byte;
224   2     dcl (errno,errfl) byte;
225   2     if pass = 0 then$do
227   3       if findsymbol(acclensave,.accumsave,.symbtabadr) then$do
229   4         call getattributes(symbtabadr,.currentsymbol);
230   4         if currentsymbol.stype <> neglected then$do
232   5           currentsymbol.stype=doubledefined;
233   5           call enterattributes(symbtabadr,.currentsymbol);
234   5         end$if;
235   4         return false;
236   4       end$if;
```

DIGITAL RESEARCH
P.O. BOX 579
PACIFIC GROVE, CA 93950
SER. #

```
                else$do
                   /* pass 1 and pass 2 */

237  3            if not findsymbol(acclensave,.accumsave,.symbtabadr) then
240  3                                                        return false;
241  3            call getattributes(symbtabadr,.currentsymbol);
242  3            errfl=true;
243  3            if currentsymbol.stype=neglected then$do
245  4              errno=neglected$err;
246  4            else$do
248  4              if currentsymbol.stype<>doubledefined then errfl=false;
                  end$if;
251  3            if errfl then$do
253  4              call exchangeaccum;
254  4              call errmsg(errno);
255  4              call exchangeaccum;
256  4              return false;
257  4            end$if;
                end$if;
259  2            return true;
260  2          end not$doub$negl;

261  1          newsym: proc byte;   /* enter new symbol into table */
262  2            if pass=0 then$do
264  3              if not newsymbol(acclensave,.accumsave,.symbtabadr) then$do
266  4                fullsymbtab=true;
267  4                return false;
268  4              end$if;
                end$if;
270  2            return true;
271  2          end newsym;

                /* set up symbol attributes for label,DB,DW,DD,RS */

272  1          setupattr: proc (styp,sfla);
273  2            dcl (styp,sfla,segtyp) byte;
274  2            segtyp=shl(csegtype,segtypecount) and segtypebit;
275  2            currentsymbol.stype=styp;
276  2            if csegspec then sfla=sfla or segmbit;
278  2            currentsymbol.sflag=sfla or segtyp;
279  2            currentsymbol.segment=csegvalue;
280  2            currentsymbol.offset=cip;
281  2          end setupattr;

282  1          entatr: proc;   /* enter attributes of current symbol into table */
283  2            if pass <> 2 then$do
285  3              call enter$attributes(symbtabadr,.currentsymbol);
286  3            end$if;
287  2          end entatr;

                          /* decode instruction */
288  1          decodeinstr: proc;
289  2            if csegtype <> rcs then$do
291  3              call errmsg(instrerr);
292  3              call skip$rest$of$line;
293  3            else$do
295  3              CALL LISTCIP;
```

COPYRIGHT © 1981, 1982
DIGITAL RESEARCH
P. O. BOX 579
PACIFIC GROVE, CA 93950
SER #

```
296  3        call instruction;  /* decode instruction */
297  3      end$if;
298  2    end decodeinstr;


299  1    labinstruction:  proc;  /* scan labelled instruction */
300  2      dcl symb based codemacroptr symbolstruc;

301  2      call saveaccum;
                                  /* enter label into symbol table */
302  2      if not$doub$negl(doubledeflab) then$do
304  3        if newsym then$do
306  4          call setupattr(lab,wrd);
307  4          call entatr;
308  4        end$if;
           end$if;
310  2      call scan;                /* skip ':' */
311  2      call scan;      /* allow empty instruction */
312  2      if emptyline then$do
314  3        call skip$rest$of$line;
315  3      else$do
317  3        if findcodemacro(acclen,.accum(0),.codemacroptr) then$do
319  4          call scan;   /* skip codemacro */
320  4          call decode$instr;
321  4        else$do
323  4          call errmsg(illegalmacro);
324  4        end$if;
325  3      end$if;
326  2    end labinstruction;


327  1    no$ident$pseudo: proc;  /* branch to correct pseudo routine */
328  2      dcl ptable(*) byte data(    /* define legal unnamed pseudos */
           pif,pendif,pinclude,pcseg,pdseg,psseg,peseg,porg,pdb,
           pdw,pdd,prb,prs,prw,pend,ppagesize,ppagewidth,
           ptitle,peject,psimform,pcodemacro,plist,pnolist,PIFLIST,PNOIFLIST,
           psegfix,pnosegfix,pmodrm,prelb,prelw,pdbit,pendm);

329  2      do case pseudotype(length(ptable),.ptable); /* branch */
330  3        call IFrout;
331  3        call ENDIFrout;
332  3        call INCLUDErout;
333  3        call CSEGrout;
334  3        call DSEGrout;
335  3        call SSEGrout;
336  3        call ESEGrout;
337  3        call ORGrout;
338  3        if codemacro$flag then call db$cm$rout;
340  3                          else call DBrout;
341  3        if codemacro$flag then call dw$cm$rout;
343  3                          else call DWrout;
344  3        if codemacro$flag then call dd$cm$rout;
346  3                          else call DDrout;
347  3        call RSrout(byt);   /* RB */
348  3        call RSrout(byt);   /* RS */
349  3        call RSrout(wrd);   /* RW */
```

COPYRIGHT © 1981, 1982
DIGITAL RESEARCH
P. O. BOX 579
PACIFIC GROVE, CA 93950
SER. #_____

```
350  3        call ENDrout;
351  3        call PAGESIZErout;
352  3        call PAGEWIDTHrout;
353  3        call TITLErout;
354  3        call EJECTrout;
355  3        call SIMFORMrout;
356  3        call CODEMACROrout;
357  3        call LISTrout;
358  3        call NOLISTrout;
359  3        CALL IFLISTROUT;
360  3        CALL NOIFLISTROUT;
361  3        call segfix$cm$rout; /* cm */
362  3        call nosegfix$cm$rout; /* cm */
363  3        call modrm$cm$rout; /* cm */
364  3        call relb$cm$rout; /* cm */
365  3        call relw$cm$rout; /* cm */
366  3        call dbit$cm$rout; /* cm */
367  3        call end$cm$rout; /* cm */
368  3        do;        /* error, illegal pseudo */
369  4        call errmsg(illegalpseudo);
370  4        call skip$rest$of$line;
371  4        end;
372  3      end$case;
373  2    end no$ident$pseudo;


374  1    identpseudo: proc(normal);   /* scan a named pseudo instruction */
375  2      dcl (noerr,normal) byte,symb based codemacroptr symbolstruc;

376  2      entervar: proc(typ);
377  3        dcl typ byte;
378  3        noerr=false;
379  3        if not$doub$negl(doubledefvar) then$do
381  4          if newsym then$do
383  5            call setupattr(variable,typ);
384  5            noerr=true;
385  5          end$if;
             end$if;
387  3      end entervar;

388  2      enter: proc;
389  3        if noerr then call entatr;
391  3      end enter;

                              /* legal pseudos: DB,DW,DD,RB,RS,RW,EQU */
392  2      dcl pseudotable(7) byte data(pdb,pdw,pdd,prb,prs,prw,pequ);

393  2      call clearsymbol;  /* clear attributes of current symbol */
394  2      if normal then$do  /* unormal if EQU with instruction parameter */
396  3        call saveaccum;
397  3        call scan;         /* scan actual pseudo */
398  3      end$if;
399  2      do case pseudotype(length(pseudotable),,pseudotable);
400  3        do;              /* DB */
401  4        call entervar(byt);
402  4        call DBrout;
403  4        call enter;
```

COPYRIGHT © 1981, 1982
DIGITAL RESEARCH
P. O. BOX 579
PACIFIC GROVE, CA 93950
SER. #

```
404  4          end;

405  3          do;              /* DW */
406  4          call entervar(wrd);
407  4          call DWrout;
408  4          call enter;
409  4          end;

410  3          do;              /* DD */
411  4          call entervar(dwrd);
412  4          call DDrout;
413  4          call enter;
414  4          end;

415  3          do;              /* RB */
416  4          call entervar(byt);
417  4          call RSrout(byt);
418  4          call enter;
419  4          end;

420  3          do;              /* RS */
421  4          call entervar(byt);
422  4          call RSrout(byt);
423  4          call enter;
424  4          end;

425  3          do;              /* RW */
426  4          call entervar(wrd);
427  4          call RSrout(wrd);
428  4          call enter;
429  4          end;

430  3          do;              /* EQU */
431  4          if not$doub$negl(doubledefsymb) then$do
433  5            if newsym then$do
435  6              call EQUrout;
436  6            else$do
438  6              call skip$rest$of$line;
439  6            end$if;
440  5          else$do
442  5            call skip$rest$of$line;
443  5          end$if;
444  4          end;

445  3          do;              /* illegal pseudo instruction */
446  4          call errmsg(illegalpseudo);
447  4          call skip$rest$of$line;
448  4          end;

449  3          do;              /* missing pseudo instruction */
450  4          call errmsg(missingpseudo);
451  4          call skip$rest$of$line;
452  4          end;
453  3        end$case;
454  2      end identpseudo;

455  1      decodeline: proc public;
```

COPYRIGHT © 1981, 1982
DIGITAL RESEARCH
P. O. BOX 579
PACIFIC GROVE, CA 93950
SER. #

```
456  2       first$item$type: proc byte;
457  3         dcl typ byte;
458  3         typ=token.type;
459  3         if typ=pseudo then return 3;
461  3         if typ=ident and nextch=':' then return 2;
463  3         if (typ=ident) or (typ=operator) then$do
465  4           if findcodemacro(acclen,.accum(0),.codemacroptr) then$do
467  5             call saveaccum;
468  5             call scan;      /* skip found codemacro */
469  5             typ=token.value;
470  5             if (token.type=pseudo) and (typ=pequ) then return 5;
472  5             return 4;
473  5           end$if;
              end$if;
475  3         if typ <> ident then return 0;  /* error */
477  3         return 1;
478  3       end first$item$type;

479  2       if accum(0) <> cr then$do    /* skip blank lines */
481  3         do case first$item$type;
482  4           do;                      /* error,skip rest of line */
483  5           call errmsg(first$item);   /* error handler */
484  5           call skip$rest$of$line;
485  5           end;
486  4           call ident$pseudo(true);  /* named pseudo instruction */
487  4           call lab$instruction;     /* label (followed by instruction) */
488  4           call no$ident$pseudo;     /* pseudo instruction */
489  4           call decodeinstr;         /* code instruction */
490  4           call identpseudo(false);  /* EQU with instruction parameter */
491  4         end$case;
492  3       end$if;
493  2     end decodeline;

494  1     end$module decode1;
```

COPYRIGHT © 1981, 1982
DIGITAL RESEARCH
P. O. BOX 579
PACIFIC GROVE, CA 93950
SER. #_____

CROSS-REFERENCE LISTING

DEFN	ADDR	SIZE	NAME, ATTRIBUTES, AND REFERENCES
169	0000H	1	ACCLEN . . . . . BYTE EXTERNAL(74) 194 195 202 317 465
170	0000H	1	ACCLENSAVE . . . . BYTE EXTERNAL(82) 194 199 200 227 239 264
169	0000H	80	ACCUM. . . . . BYTE ARRAY(80) EXTERNAL(75) 195 203 317 465 479
170	0000H	80	ACCUMSAVE. . . . . BYTE ARRAY(80) EXTERNAL(81) 195 200 227 239 264
2			ADDR . . . . . LITERALLY 11 14 17 20 26 44 47 50 53 139 140 146 149 152 155 158 161 164 167 169 170 300 375
34	0000H		ALPHANUMERIC . . . PROCEDURE BYTE EXTERNAL(8) STACK=0000H
37	0000H		ASCIICHAR. . . . . PROCEDURE BYTE EXTERNAL(9) STACK=0000H
166	0000H	2	ASCIIPTR . . . . . WORD PARAMETER 167
300	0008H	1	BASEINDEX. . . . . BYTE MEMBER(SYMB)
170	0008H	1	BASEINDEX. . . . . BYTE MEMBER(CURRENTSYMBOL) 206
169	0008H	1	BASEINDEX. . . . . BYTE MEMBER(OPERANDS)
375	0008H	1	BASEINDEX. . . . . BYTE MEMBER(SYMB)
3			BASEREGBIT . . . . LITERALLY
3			BASEREGCOUNT . . . LITERALLY
3			BREGBIT. . . . . LITERALLY
3			BREGCOUNT. . . . . LITERALLY
5			BYT. . . . . LITERALLY 347 348 401 416 417 421 422
31	0000H	1	CH . . . . . BYTE PARAMETER 32
28	0000H	1	CH . . . . . BYTE PARAMETER 29
34	0000H	1	CH . . . . . BYTE PARAMETER 35
37	0000H	1	CH . . . . . BYTE PARAMETER 38
25	0000H	1	CH . . . . . BYTE PARAMETER 26
69	0000H	1	CH . . . . . BYTE PARAMETER 70
40	0000H	1	CH . . . . . BYTE PARAMETER 41
167	0000H	2	CIP. . . . . WORD EXTERNAL(66) 230
205	0043H	19	CLEARSYMBOL. . . . PROCEDURE STACK=000AH 393
4			CODE . . . . . LITERALLY
9			CODEMACROERR . . . LITERALLY
170	0000H	1	CODEMACROFLAG. . . BYTE EXTERNAL(87) 338 341 344
3			CODEMACROHEAD. . . LITERALLY
170	0000H	2	CODEMACROPTR . . . WORD EXTERNAL(86) 300 317 375 465
171	0000H		CODEMACROROUT. . . PROCEDURE EXTERNAL(88) STACK=0000H 356
16	0000H		COPY . . . . . PROCEDURE EXTERNAL(2) STACK=0000H 195 200 203
2			CR . . . . . LITERALLY 479
98	0000H		CSEGROUT . . . . . PROCEDURE EXTERNAL(34) STACK=0000H 333
169	0000H	1	CSEGSPEC . . . . . BYTE EXTERNAL(69) 276
169	0000H	1	CSEGTYPE . . . . . BYTE EXTERNAL(67) 274 289
169	0000H	2	CSEGVALUE. . . . . WORD EXTERNAL(68) 279
167	0000H	2	CURDSEG. . . . . WORD EXTERNAL(71)
170	0000H	9	CURRENTSYMBOL. . . STRUCTURE EXTERNAL(84) 206 229 230 232 233 241 243 248 275 278 279 280 285
16	0000H	2	D. . . . . WORD PARAMETER 17
52	0000H	2	D. . . . . WORD PARAMETER 53
49	0000H	2	D. . . . . WORD PARAMETER 50
46	0000H	2	D. . . . . WORD PARAMETER 47
43	0000H	2	D. . . . . WORD PARAMETER 44
173	0000H		DBCHROUT . . . . . PROCEDURE EXTERNAL(89) STACK=0000H 339
139	0000H		DBITCHROUT . . . . PROCEDURE EXTERNAL(97) STACK=0000H 366

```
 87  0000H        DBROUT . . . . . .  PROCEDURE EXTERNAL(30) STACK=0000H      340  402
  2               DCL. . . . . .      LITERALLY
177  0000H        DDCMROUT . . . . .  PROCEDURE EXTERNAL(91) STACK=0000H      345
 93  0000H        DDROUT . . . . . .  PROCEDURE EXTERNAL(32) STACK=0000H      346  412
288  01B2H   29   DECODEINSTR. . . .  PROCEDURE STACK=0006H         320  489
  1  0000H        DECODEL. . . . . .  PROCEDURE STACK=0000H
455  0432H   76   DECODELINE . . . .  PROCEDURE PUBLIC STACK=0024H
 52  0000H        DECOUT . . . . . .  PROCEDURE EXTERNAL(14) STACK=0000H
  1               DELETEDSYMB. . . .  LITERALLY
169  0001H    1   DESCR. . . . . .    BYTE MEMBER(TOKEN)
154  0000H    2   DEST . . . . . .    WORD PARAMETER      155
 28  0000H        DIGIT. . . . . .    PROCEDURE BYTE EXTERNAL(6) STACK=0000H
  4               DOUBLEDEFINED. . .  LITERALLY      232  248
  9               DOUBLEDEFLAB . . .  LITERALLY      302
  9               DOUBLEDEFSYMB. . .  LITERALLY      431
  7               DOUBLEDEFVAR . . .  LITERALLY      379
100  0000H        DSEGROUT . . . . .  PROCEDURE EXTERNAL(35) STACK=0000H      334
169  0000H    1   DSPEC. . . . . .    BYTE EXTERNAL(70)
175  0000H        DWCMROUT . . . . .  PROCEDURE EXTERNAL(90) STACK=0000H      342
  5               DWRD . . . . . .    LITERALLY      411
 91  0000H        DWROUT . . . . . .  PROCEDURE EXTERNAL(31) STACK=0000H      343  407
 83  0000H        EJECT. . . . . .    PROCEDURE EXTERNAL(27) STACK=0000H
124  0000H        EJECTROUT. . . . .  PROCEDURE EXTERNAL(47) STACK=0000H      354
  2               ELSEDO . . . . . .  LITERALLY      236
 67  0000H        EMPTYLINE. . . . .  PROCEDURE BYTE EXTERNAL(20) STACK=0000H      312
  2               ENDCASE. . . . . .  LITERALLY
171  0000H        ENDCMROUT. . . . .  PROCEDURE EXTERNAL(98) STACK=0000H      347
  2               ENDDO. . . . . .    LITERALLY
  2               ENDFOREVER . . . .  LITERALLY
  2               ENDIF. . . . . .    LITERALLY      249  257  268  308  385  473
112  0000H        ENDIFROUT. . . . .  PROCEDURE EXTERNAL(41) STACK=0000H      331
  2               ENDMODULE. . . . .  LITERALLY
  2               ENDOFFILE. . . . .  LITERALLY
  9               ENDOFLINEERR . . .  LITERALLY
140  0000H    2   ENDOFSYMBTAB . . .  WORD EXTERNAL(55)
  2               ENDPROC. . . . . .  LITERALLY
116  0000H        ENDROUT. . . . . .  PROCEDURE EXTERNAL(43) STACK=0000H      350
  2               ENDWHILE . . . . .  LITERALLY      219
282  019BH   23   ENTAIR . . . . . .  PROCEDURE STACK=0008H         307  390
388  0423H   15   ENTER. . . . . .    PROCEDURE STACK=000CH         403  408  413  418  423  428
157  0000H        ENTERATTRIBUTES. .  PROCEDURE EXTERNAL(62) STACK=0000H      233  285
376  03F8H   43   ENTERVAR . . . . .  PROCEDURE STACK=001AH         401  406  411  416  421  426
 43  0000H        EQUAL. . . . . .    PROCEDURE BYTE EXTERNAL(11) STACK=0000H
108  0000H        EQUROUT. . . . . .  PROCEDURE EXTERNAL(39) STACK=0000H      435
224  0053H    1   ERRFL. . . . . .    BYTE      242  249  251
136  0000H        ERRMSG . . . . . .  PROCEDURE EXTERNAL(53) STACK=0000H      254  291  323  369  446  450
                                      483
136  0000H    1   ERRNO. . . . . .    BYTE PARAMETER      137
223  0004H    1   ERRNO. . . . . .    BYTE PARAMETER AUTOMATIC      224  245  254
  4               ERROR. . . . . .    LITERALLY
104  0000H        ESEGROUT . . . . .  PROCEDURE EXTERNAL(37) STACK=0000H      336
197  0017H   44   EXCHANGEACCUM. . .  PROCEDURE STACK=000EH         253  255
  2               FALSE. . . . . .    LITERALLY      235  240  249  256  267  378  490
 22  0000H    2   FCBADR . . . . . .  WORD PARAMETER       23
 22  0000H        FILEABORT. . . . .  PROCEDURE EXTERNAL(4) STACK=0000H
  3               FILEISTRUCTURE . .  LITERALLY
  3               FILEOSTRUCTURE . .  LITERALLY
```

```
  9                FILESYNTERR. . . .   LITERALLY
 25  0000H         FILL . . . . . .     PROCEDURE EXTERNAL(5) STACK=0000H       206
160  0000H         FINDCODEMACRO. . .   PROCEDURE BYTE EXTERNAL(63) STACK=0000H      317  465
151  0000H         FINDSYMBOL . . . .   PROCEDURE BYTE EXTERNAL(60) STACK=0000H      227  239
  9                FIRSTITEM. . . . .   LITERALLY       483
456  047EH   117   FIRSTITEMTYPE. . .   PROCEDURE BYTE STACK=000EH          481
  2                FOREVER. . . . . .   LITERALLY
  2                FORMFEED . . . . .   LITERALLY
139  0000H     2   FREEP  . . . . . .   WORD EXTERNAL(54)
170  0000H     1   FULLSYMBTAB. . . .   BYTE EXTERNAL(83)         266
154  0000H         GETATTRIBUTES. . .   PROCEDURE EXTERNAL(61) STACK=0000H       229  241
 46  0000H         HEX1OUT. . . . . .   PROCEDURE EXTERNAL(12) STACK=0000H
 49  0000H         HEX2OUT. . . . . .   PROCEDURE EXTERNAL(13) STACK=0000H
209  0051H     1   I. . . . . .         BYTE       212  213  215  218  221
  4                IDENT  . . . . . .   LITERALLY       461  463  475
374  034DH   171   IDENTPSEUDO. . . .   PROCEDURE STACK=0020H          486  490
132  0000H         IFLISTROUT . . . .   PROCEDURE EXTERNAL(51) STACK=0000H       359
  9                IFPARERR . . . . .   LITERALLY
110  0000H         IFROUT . . . . . .   PROCEDURE EXTERNAL(40) STACK=0000H       330
  9                ILLEGALMACRO . . .   LITERALLY       323
  9                ILLEGALPSEUDO. . .   LITERALLY       369  446
  9                ILLEXPRELEM. . . .   LITERALLY
  9                ILLIOPER . . . . .   LITERALLY
114  0000H         INCLUDEROUT. . . .   PROCEDURE EXTERNAL(42) STACK=0000H       332
  3                INDEXREGBIT. . . .   LITERALLY
  3                INDEXREGCOUNT. . .   LITERALLY
  2                INIT . . . . . .     LITERALLY
  9                INSTRERR . . . . .   LITERALLY       291
 85  0000H         INSTRUCTION. . . .   PROCEDURE EXTERNAL(28) STACK=0000H       296
  3                IREGBIT. . . . . .   LITERALLY
  3                IREGCOUNT. . . . .   LITERALLY
  4                LAB. . . . . .       LITERALLY       306
299  01CFH    88   LABINSTRUCTION . .   PROCEDURE STACK=0018H          487
  9                LABOUTOFRANGE. . .   LITERALLY
  8                LEFTBRACKET. . . .   LITERALLY
                   LENGTH . . . . . .   BUILTIN         329  399
169  0000H     2   LENGTH . . . . . .   WORD MEMBER(OPERANDS)
300  0000H     2   LENGTH . . . . . .   WORD MEMBER(SYMB)
170  0000H     2   LENGTH . . . . . .   WORD MEMBER(CURRENTSYMBOL)
375  0000H     2   LENGTH . . . . . .   WORD MEMBER(SYMB)
 31  0000H         LETTER . . . . . .   PROCEDURE BYTE EXTERNAL(7) STACK=0000H
  2                LF . . . . . .       LITERALLY
208  0006H     1   LG . . . . . .       BYTE PARAMETER AUTOMATIC       209  211  213
160  0000H     1   LG . . . . . .       BYTE PARAMETER       161
151  0000H     1   LG . . . . . .       BYTE PARAMETER       152
148  0000H     1   LG . . . . . .       BYTE PARAMETER       149
163  0000H     1   LG . . . . . .       BYTE PARAMETER       164
145  0000H     1   LG . . . . . .       BYTE PARAMETER       146
166  0000H     1   LG . . . . . .       BYTE PARAMETER       167
 37  0000H         LISTCIP. . . . . .   PROCEDURE EXTERNAL(29) STACK=0000H       295
128  0000H         LISTROUT . . . . .   PROCEDURE EXTERNAL(49) STACK=0000H       357
  2                LIT. . . . . .       LITERALLY         2    3    4    5    6    7    8    9
198  0000H     1   LOCACCLEN. . . . .   BYTE       199  202  203
193  0001H    80   LOCACCUM . . . . .   BYTE ARRAY(80)       200  203
209  0052H     1   LVALUE . . . . . .   BYTE       214  215
148  0000H     2   MACDEFPT . . . . .   WORD PARAMETER       149
  9                MISSIFERR. . . . .   LITERALLY
```

```
  9             MISSINGPSEUDO. . .  LITERALLY      450
  9             MISSINSTR. . . . .  LITERALLY
  9             MISSSEGMINFO . . .  LITERALLY
  9             MISSTYPEINFO . . .  LITERALLY
183 0000H       MODRMCKROUT. . . .  PROCEDURE EXTERNAL(94) STACK=0000H      363
 25 0000H   1   N. . . . . .  BYTE PARAMETER       26
 16 0000H   1   N. . . . . .  BYTE PARAMETER       17
 13 0000H   2   N. . . . . .  WORD PARAMETER       14
 52 0000H   2   N. . . . . .  WORD PARAMETER       53
 49 0000H   2   N. . . . . .  WORD PARAMETER       50
 46 0000H   1   N. . . . . .  BYTE PARAMETER       47
 43 0000H   1   N. . . . . .  BYTE PARAMETER       44
  4             NEGLECTED. . . . .  LITERALLY      230  243
  9             NEGLECTERR . . . .  LITERALLY      245
  9             NESTEDIFERR. . . .  LITERALLY
  9             NESTEDINCLUDEERR .  LITERALLY
163 0000H       NEWCMBODY. . . . .  PROCEDURE BYTE EXTERNAL(64) STACK=0000H
166 0000H       NEWCMNAME. . . . .  PROCEDURE BYTE EXTERNAL(65) STACK=0000H
148 0000H       NEWMACRO . . . . .  PROCEDURE BYTE EXTERNAL(59) STACK=0000H
261 0136H  44   NEWSYM . . . . . .  PROCEDURE BYTE STACK=000AH        304  381  433
145 0000H       NEWSYMBOL. . . . .  PROCEDURE BYTE EXTERNAL(58) STACK=0000H      264
169 0000H   1   NEXTCH . . . . . .  BYTE EXTERNAL(73)       461
  5             NIL. . . . . .  LITERALLY
375 0055H   1   NOERR. . . . . .  BYTE      378  384  389
327 0227H 294   NOIDENTPSEUDO. . .  PROCEDURE STACK=000CH        488
134 0000H       NOIFLISTROUT . . .  PROCEDURE EXTERNAL(52) STACK=0000H      360
130 0000H       NOLISTROUT . . . .  PROCEDURE EXTERNAL(50) STACK=0000H      358
167 0000H   1   NOOPER . . . . . .  BYTE EXTERNAL(76)
  3             NOOVERCOUNT. . . .  LITERALLY
  3             NOOVERRIDEBIT. . .  LITERALLY
374 0004H   1   NORMAL . . . . . .  BYTE PARAMETER AUTOMATIC      375  394
131 0000H       NOSEGFIXCMROUT . .  PROCEDURE EXTERNAL(93) STACK=0000H      362
223 009AH 156   NOTDOUBNEGL. . . .  PROCEDURE BYTE STACK=0014H        302  379  431
  4             NUMBER . . . . . .  LITERALLY
  8             OAND . . . . . .  LITERALLY
  8             OEQ. . . . . .  LITERALLY
375 0006H   2   OFFSET . . . . . .  WORD MEMBER(SYMB)
170 0006H   2   OFFSET . . . . . .  WORD MEMBER(CURRENTSYMBOL)        280
169 0006H   2   OFFSET . . . . . .  WORD MEMBER(OPERANDS)
300 0006H   2   OFFSET . . . . . .  WORD MEMBER(SYMB)
  8             OGE. . . . . .  LITERALLY
  8             OGT. . . . . .  LITERALLY
  8             OLAST. . . . . .  LITERALLY
  8             OLE. . . . . .  LITERALLY
  8             OLENGTH. . . . . .  LITERALLY
  8             OLT. . . . . .  LITERALLY
  8             OMOD . . . . . .  LITERALLY
  8             ONE. . . . . .  LITERALLY
  8             ONOT . . . . . .  LITERALLY
  8             OOFFSET. . . . . .  LITERALLY
  8             OOR. . . . . .  LITERALLY
169 0000H  36   OPERANDS . . . . .  STRUCTURE ARRAY(4) EXTERNAL(77)
  3             OPERANDSTRUC . . .  LITERALLY      169
  4             OPERATOR . . . . .  LITERALLY      463
  9             OPMISMATCH . . . .  LITERALLY
  8             OPTR . . . . . .  LITERALLY
106 0000H       ORGROUT. . . . . .  PROCEDURE EXTERNAL(38) STACK=0000H      337
```

```
   8                  OSEG . . . . . .   LITERALLY
   8                  OSHL . . . . . .   LITERALLY
   8                  OSHORT . . . . .   LITERALLY
   8                  OSHR . . . . . .   LITERALLY
   8                  OTYPE. . . . . .   LITERALLY
  19  0000H           OUTTEXT. . . . .   PROCEDURE EXTERNAL(3) STACK=0000H
   8                  OXOR . . . . . .   LITERALLY
 118  0000H           PAGESIZEROUT . . .  PROCEDURE EXTERNAL(44) STACK=0000H      351
 120  0000H           PAGEWIDTHROUT. . .  PROCEDURE EXTERNAL(45) STACK=0000H      352
 170  0000H     1     PASS . . . . . .   BYTE EXTERNAL(78)        225  262  283
   7                  PCODEMACRO . . . .  LITERALLY       328
   7                  PCSEG. . . . . .   LITERALLY       328
   7                  PDB. . . . . .     LITERALLY       328  392
   7                  PDBIT. . . . . .   LITERALLY       328
   7                  PDD. . . . . .     LITERALLY       328  392
   7                  PDSEG. . . . . .   LITERALLY       328
   7                  PDW. . . . . .     LITERALLY       328  392
   7                  PEJECT . . . . .   LITERALLY       328
   7                  PEND . . . . . .   LITERALLY       328
   7                  PENDIF . . . . .   LITERALLY       328
   7                  PENDM. . . . . .   LITERALLY       328
   7                  PEQU . . . . . .   LITERALLY       392  470
   7                  PESEG. . . . . .   LITERALLY       328
   7                  PIF. . . . . .     LITERALLY       328
   7                  PIFLIST. . . . .   LITERALLY       328
   7                  PINCLUDE . . . . .  LITERALLY       328
   7                  PLIST. . . . . .   LITERALLY       328
   7                  PMODRM . . . . .   LITERALLY       328
   7                  PNOIFLIST. . . . .  LITERALLY       328
   7                  PNOLIST. . . . .   LITERALLY       328
   7                  PNOSEGFIX. . . . .  LITERALLY       328
   7                  PORG . . . . . .   LITERALLY       328
   7                  PPAGESIZE. . . . .  LITERALLY       328
   7                  PPAGEWIDTH . . . .  LITERALLY       328
   7                  PRB. . . . . .     LITERALLY       328  392
 170  0000H   240     PREFIX . . . . . .  BYTE ARRAY(240) EXTERNAL(79)
 170  0000H     1     PREFIXPTR. . . . .  BYTE EXTERNAL(80)
   7                  PRELB. . . . . .   LITERALLY       328
   7                  PRELW. . . . . .   LITERALLY       328
  72  0000H           PRINTCRLF. . . . .  PROCEDURE EXTERNAL(22) STACK=0000H
  78  0000H           PRINTINIT. . . . .  PROCEDURE EXTERNAL(25) STACK=0000H
  74  0000H           PRINTNEWPAGE . . .  PROCEDURE EXTERNAL(23) STACK=0000H
  69  0000H           PRINTSINGLEBYTE. .  PROCEDURE EXTERNAL(21) STACK=0000H
  73  0000H           PRINTSOURCELINE. .  PROCEDURE EXTERNAL(24) STACK=0000H
  80  0000H           PRINTTERMINATE . .  PROCEDURE EXTERNAL(26) STACK=0000H
   2                  PROC . . . . . .   LITERALLY        10   13   34   37   46   49   52   55   57   59   61
                                           64   67   69   72   74   76   78   80   83   85   89   91   93   95
                                           98  100  102  104  106  108  110  112  114  116  118  120  122  124
                                          126  128  130  132  134  136  141  143  145  148  151  154  157  160
                                          163  166  171  173  175  177  179  181  183  185  187  189  191  193
                                          197  205  208  223  261  272  282  288  299  327  374  376  388  455
                                          456
   7                  PRS. . . . . .     LITERALLY       328  392
   7                  PRW. . . . . .     LITERALLY       328  392
   7                  PSEGFIX. . . . .   LITERALLY       328
   4                  PSEUDO . . . . .   LITERALLY       210  459  470
   9                  PSEUDOOPERR. . . .  LITERALLY
```

COPYRIGHT © 1981, 1982
DIGITAL RESEARCH
P.O. BOX 579
PACIFIC GROVE, CA 93950
SER. #

```
372  0020H    7  PSEUDOTABLE. . . .   BYTE ARRAY(7) DATA       399
208  0056H   68  PSEUDOTYPE . . . .   PROCEDURE BYTE STACK=0008H          329  399
  7             PSINFORM . . . . .   LITERALLY       328
  7             PSSEG. . . . . .     LITERALLY       328
209  0000H    1  PSTABLE. . . . . .   BYTE BASED(PTR) ARRAY(1)       215
 25  0000H    2  PT . . . . . .       WORD PARAMETER        26
328  0000H   32  PTABLE . . . . . .   BYTE ARRAY(32) DATA       329
  7             PTITLE . . . . . .   LITERALLY       328
208  0004H    2  PTR. . . . . .       WORD PARAMETER AUTOMATIC       209  215
163  0000H    2  PTR. . . . . .       WORD PARAMETER       164
  6             RAH. . . . . .       LITERALLY
  6             RAL. . . . . .       LITERALLY
  6             RAX. . . . . .       LITERALLY
  6             RBH. . . . . .       LITERALLY
  6             RBL. . . . . .       LITERALLY
  6             RBP. . . . . .       LITERALLY
  6             RBX. . . . . .       LITERALLY
  6             RCH. . . . . .       LITERALLY
  6             RCL. . . . . .       LITERALLY
  6             RCS. . . . . .       LITERALLY       289
  6             RCX. . . . . .       LITERALLY
  6             RDH. . . . . .       LITERALLY
  6             RDI. . . . . .       LITERALLY
  6             RDL. . . . . .       LITERALLY
  6             RDS. . . . . .       LITERALLY
  6             RDX. . . . . .       LITERALLY
  2             REENT. . . . . .     LITERALLY
  4             REG. . . . . .       LITERALLY
185  0000H        RELBCHROUT . . . .   PROCEDURE EXTERNAL(95) STACK=0000H       364
187  0000H        RELWCHROUT . . . .   PROCEDURE EXTERNAL(96) STACK=0000H       365
  6             RES. . . . . .       LITERALLY
160  0000H    2  RESULT . . . . . .   WORD PARAMETER       161
151  0000H    2  RESULT . . . . . .   WORD PARAMETER       152
145  0000H    2  RESULT . . . . . .   WORD PARAMETER       146
166  0000H    2  RETURNPTR. . . . .   WORD PARAMETER       167
  8             RIGHTBRACKET . . .   LITERALLY
  6             RSI. . . . . .       LITERALLY
  6             RSP. . . . . .       LITERALLY
 95  0000H        RSROUT . . . . . .   PROCEDURE EXTERNAL(33) STACK=0000H       347  348  349  417  422  427
  6             RSS. . . . . .       LITERALLY
 16  0000H    2  S. . . . . .         WORD PARAMETER        17
 43  0000H    2  S. . . . . .         WORD PARAMETER        44
193  0000H   23  SAVEACCUM. . . . .   PROCEDURE STACK=000AH          201  301  396  467
 57  0000H        SCAN . . . . . .     PROCEDURE EXTERNAL(16) STACK=0000H       217  310  311  319  397  468
 55  0000H        SCANINIT . . . . .   PROCEDURE EXTERNAL(15) STACK=0000H
179  0000H        SEGFIXCHROUT . . .   PROCEDURE EXTERNAL(92) STACK=0000H       361
  3             SEGMBIT. . . . . .   LITERALLY       277
  3             SEGMCOUNT. . . . .   LITERALLY
375  0004H    2  SEGMENT. . . . . .   WORD MEMBER(SYMB)
300  0004H    2  SEGMENT. . . . . .   WORD MEMBER(SYMB)
170  0004H    2  SEGMENT. . . . . .   WORD MEMBER(CURRENTSYMBOL)          279
169  0004H    2  SEGMENT. . . . . .   WORD MEMBER(OPERANDS)
273  0054H    1  SEGTYP . . . . . .   BYTE       274  278
  3             SEGTYPEBIT . . . .   LITERALLY       274
  3             SEGTYPECOUNT . . .   LITERALLY       274
272  0162H   57  SETUPATTR. . . . .   PROCEDURE STACK=0006H          306  383
272  0004H    1  SFLA . . . . . .     BYTE PARAMETER AUTOMATIC       273  277  278
```

```
375  0003H    1  SFLAG. . . . . .  BYTE MEMBER(SYMB)
300  0003H    1  SFLAG. . . . . .  BYTE MEMBER(SYMB)
170  0003H    1  SFLAG. . . . . .  BYTE MEMBER(CURRENTSYMBOL)          278
169  0003H    1  SFLAG. . . . . .  BYTE MEMBER(OPERANDS)
                 SHL. . . . . .  BUILTIN        274
126  0000H       SIMFORMROUT. . . .  PROCEDURE EXTERNAL(48) STACK=0000H      355
 59  0000H       SKIPRESTOFLINE . .  PROCEDURE EXTERNAL(17) STACK=0000H      292  314  370  438  442  447
                                      451  484
 64  0000H       SKIPUNTIL. . . . .  PROCEDURE BYTE EXTERNAL(19) STACK=0000H
157  0000H    2  SOURCE . . . . . .  WORD PARAMETER      158
  2              SPACE. . . . . .  LITERALLY
  4              SPEC . . . . . .  LITERALLY
 61  0000H       SPECIALTOKEN . . .  PROCEDURE BYTE EXTERNAL(18) STACK=0000H
102  0000H       SSEGROUT . . . . .  PROCEDURE EXTERNAL(36) STACK=0000H      335
160  0000H    2  STRADR . . . . . .  WORD PARAMETER      161
151  0000H    2  STRADR . . . . . .  WORD PARAMETER      152
148  0000H    2  STRADR . . . . . .  WORD PARAMETER      149
145  0000H    2  STRADR . . . . . .  WORD PARAMETER      146
  4              STRING . . . . . .  LITERALLY
  2              STRUC. . . . . .  LITERALLY      169  170  300  375
272  0006H    1  STYP . . . . . .  BYTE PARAMETER AUTOMATIC      273  275
375  0002H    1  STYPE. . . . . .  BYTE MEMBER(SYMB)
300  0002H    1  STYPE. . . . . .  BYTE MEMBER(SYMB)
170  0002H    1  STYPE. . . . . .  BYTE MEMBER(CURRENTSYMBOL)          230  232  243  248  275
169  0002H    1  STYPE. . . . . .  BYTE MEMBER(OPERANDS)
375  0000H    9  SYMB . . . . . .  STRUCTURE BASED(CODEMACROPTR)
300  0000H    9  SYMB . . . . . .  STRUCTURE BASED(CODEMACROPTR)
157  0000H    2  SYMBADR. . . . . .  WORD PARAMETER      158
154  0000H    2  SYMBADR. . . . . .  WORD PARAMETER      155
143  0000H       SYMBINIT . . . . .  PROCEDURE EXTERNAL(57) STACK=0000H
  4              SYMBOL . . . . . .  LITERALLY
  3              SYMBOLHEAD . . . .  LITERALLY
  3              SYMBOLSTRUC. . . .  LITERALLY      169  170  300  375
170  0000H    2  SYMBTABADR . . . .  WORD EXTERNAL(85)        227  229  233  239  241  264  285
141  0000H       SYMBTERMINATE. . .  PROCEDURE EXTERNAL(56) STACK=0000H
 19  0000H    2  T. . . . . .  WORD PARAMETER       20
  2              TAB. . . . . .  LITERALLY
 22  0000H    2  TEXTADR. . . . . .  WORD PARAMETER       23
  2              THENDO . . . . . .  LITERALLY      215  225  227  230  243  251  262  264  283  289  302
                                      304  312  317  379  381  394  431  433  463  465  479
122  0000H       TITLEROUT. . . . .  PROCEDURE EXTERNAL(46) STACK=0000H      353
 64  0000H    1  TOK. . . . . .  BYTE PARAMETER       65
 61  0000H    1  TOK. . . . . .  BYTE PARAMETER       62
169  0000H    4  TOKEN. . . . . .  STRUCTURE EXTERNAL(72)        210  214  458  469  470
  2              TRUE . . . . . .  LITERALLY      242  259  266  270  384  486
457  0056H    1  TYP. . . . . .  BYTE      458  459  461  463  469  470  475
376  0004H    1  TYP. . . . . .  BYTE PARAMETER AUTOMATIC      377  383
 95  0000H    1  TYP. . . . . .  BYTE PARAMETER       96
169  0000H    1  TYPE . . . . . .  BYTE MEMBER(TOKEN)       210  458  470
  3              TYPEBIT. . . . . .  LITERALLY
 10  0000H       TYPECALC . . . . .  PROCEDURE BYTE EXTERNAL(0) STACK=0000H
  3              TYPECOUNT. . . . .  LITERALLY
  4              UDEFSYMB . . . . .  LITERALLY
  9              UDEFSYMBOL . . . .  LITERALLY
 10  0000H       UPPER. . . . . .  PROCEDURE BYTE EXTERNAL(10) STACK=0000H
 80  0000H    1  USEFACT. . . . . .  BYTE PARAMETER       81
 10  0000H    2  VAL. . . . . .  WORD PARAMETER       11
```

```
PL/M-86 COMPILER.  DECODE LINE MODULE

                                    WORD MEMBER(TOKEN)          214  469
169  0002H    2 VALUE. . . . . .    LITERALLY                   383
  4             VARIABLE . . . . .  LITERALLY                   306  349  406  426  427
  5             WRD. . . . . .      PROCEDURE BYTE EXTERNAL(1) STACK=0000H
 13  0000H     WRITEST. . . . . .

MODULE INFORMATION:

     CODE AREA SIZE     = 04F3H   1267D
     CONSTANT AREA SIZE = 0027H     39D
     VARIABLE AREA SIZE = 0057H     87D
     MAXIMUM STACK SIZE = 0024H     36D
     1005 LINES READ
     0 PROGRAM ERROR(S)

END OF PL/M-86 COMPILATION
```

COPYRIGHT © 1981, 1982
DIGITAL RESEARCH
P. O. BOX 579
PACIFIC GROVE, CA 93950

SER. #_____